



SEQUENCE LISTING

<110> Barnett, Susan
Zur Megede, Jan

<120> POLYNUCLEOTIDES ENCODING ANTIGENIC HIV TYPE C
POLYPEPTIDES, POLYPEPTIDES AND USES THEREOF

<130> 1631.002

<140> 09/475,704
<141> 1999-12-30

<150> 60/152,195
<151> 1999-09-01

<160> 30

<170> PatentIn Ver. 2.0

<210> 1
<211> 60
<212> DNA
<213> Human immunodeficiency virus

<400> 1
gacatcaagc agggcccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 60

<210> 2
<211> 60
<212> DNA
<213> Human immunodeficiency virus

<400> 2
gacatccgcc agggcccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 60

<210> 3
<211> 1479
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag
of HIV strain AF110965

<400> 3
atgggcgccc ggcgcagcat cctgcgcggc ggcaagctgg acgcctggga ggcgcattccgc 60
ctgcgcggcc gggcaagaa gtgtacatg atgaagcacc tgggtgtgggc cagccgcgag 120
ctggagaagt tggccctgaa ccccgccctg ctggagacca gcgagggctg caagcagatc 180
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gccgacaagg gcaagggtgag ccagaactac cccatcgtgc agaacctgca gggccagatg 420
gtgcaccagg ccatcagccc cgcacccctg aacgcctggg tgaagggtat cgaggagaag 480

gccttcagcc ccgaggtgat cccatgttc accgcctga gcgaggcgac caccggcc 540
gacctgaaca cgatgtgaa caccgtggc ggccaccagg cgcacatgca gatgctgaag 600

gacaccatca acgaggaggc cgccgagtgg gaccgcgtgc acccccgtgca cgccggcccc 660
atcgcccccg gccagatgcg cgagcccgcc ggcagcgaca tcgcggcac caccagcacc 720
ctgcaggagc agatcgctg gatgaccagc aaccccccga tccccgtggg cgacatctac 780
aagcggtgga tcatcctggg cctgaacaag atcgtgcggta tgcacagccc cgtgagcatc 840
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ttcgaggaga ccaccccccgg ccagaagcag gagagcaagg accgcgagac cctgaccagc 1440
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<210> 4
<211> 1509
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic Gag
of HIV strain AF110967

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ctggacaaga tcgaggagga gcaacaag tcccagcaga agacccagca ggccaaggag 360
gcccacggca aggtgagcca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
caccaggcca tcagcccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc 480
ttcagccccg aggtgatccc catgttccacc gcctgagcg agggcgccac ccccccaggac 540
ctgaacacac tggtgaacac cgtggcgccg caccaggccg ccattgcagat gctgaaggac 600
accatcaacg aggaggccgc cgagtggac cgcctgcacc ccgtgcaggc cggcccccgtg 660
gccccccggcc agatgcgcga ccccccggcc agcgacatcg cccgcgcac cagcaccctg 720
caggagcaga tcgcctggat gaccagcaac ccccccgtgc ccgtggcgca catctacaag 780
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cccccggaga gcttccgctt cgaggagacc acccccggcc ccaaggcggaa gccaaggac 1440
cgcgagccct accgcgagcc cctgaccgcctc ctgcgcagcc tggtcgccag cggcccccgtg 1500
agccagtaa 1509

<210> 5
<211> 141
<212> DNA
<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Env common
 region of HIV strain AF110968

<400> 5
 accatcacca tcacacctgccc catcaaggcag atcatcaaca tgtggcagaa ggtggggccgc 60
 gccatgtacg ccccccccat cggccggcaac ctgacacctgag agagcaacat caccggcctg 120
 ctgctgaccc gcgacggcgg c 141

<210> 6
 <211> 1431
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 gp120 coding region of HIV strain AF110968

<400> 6
 agcgtggtgg gcaacacctgtg ggtgaccgtg tactacggcg tgccctgtg gaaggaggcc 60
 aagaccaccc tggcttcac cagcgcacgccc aaggccctacg agaccgaggt gcacaacgtg 120
 tggccacccc acgcctgcgt gcccacccgac cccaaacccccc aggagatcgt gctggagaac 180
 gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatgca cgaggacatc 240
 atcagcctgt gggaccagag cctgaagcccc tgcgtgaagc tgaccccccgt gtgcgtgacc 300
 ctgaagtgcc gcaacgtgaa cggccaccaac aacatcaaca gcatgatgca caacagcaac 360
 aaggcgaga tgaagaactg cagcttcaac gtgaccaccg agtgcgcgca cccgcaagcag 420
 gaggtgcacg ccctgttcta cccgcctggac gtgggtggccc tgccaggccaa caacagcaac 480
 gagtaccgcg tcatcaactg caacaccgcg gcccattaccc aggcctgccc caaggtgagc 540
 ttgcacccca tccccatcca ctactgcacc cccgcggct acgcctatcct gaagtgcac 600
 aaccagacct tcaacgcac cggccctgc aacaacgtga gcagcgtgca gtgcgcac 660
 ggcacatcaaggcc cctgtggtag caccctgatcgt ctgctgaaacg gcagcctggc caaggcgag 720
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 aacagcacct acagccccag cttcaacccggc accgagaaca agtgcacccgg caccatcacc 1140
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 gccccccca tcgcccggca cctgacacctgc gagagcaaca tcaccggcct gctgctgacc 1260
 cgcacccggc gcaagaccgg ccccaacccgac accgagatct tccggcccccgg cggcggcgac 1320
 atgcgcgaca actggccaa cggatgtac aagtacaagg tgggtggagat caagcccttg 1380
 ggcgtggccc ccaccggaggc caagcgccgc gtgggtggaggc gcgagaaggc 1431

<210> 7
 <211> 1944
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 gp140 coding region of HIV strain AF110968

<400> 7
 agcgtggtgg gcaacacctgtg ggtgaccgtg tactacggcg tgccctgtg gaaggaggcc 60

aagaccaccc tggccaccc acgcctgcgt gcccaccgac cccaaaccccc aggagatcg gctggagaac 180
gtgaccgaga acttcaacat gtgagaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc tgcgtgaagc tgaccccccgt gtgcgtgacc 300
ctgaagtgcc gcaacgtgaa cgccaccaac aacatcaaca gcatgatcgca caacagcaac 360
aagggcgaga tgaagaactg cagcttcaac gtgaccaccc agctgcgcga ccgcaagcag 420
gaggtgcacg ccctgttcta ccgcctggac gtgggtcccc tgcaggcaca caacagcaac 480
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aaccagacct tcaacgcac cgccccctgc aacaacgtga gcagcgtgca gtgcgcac 660
ggcatcaagc ccgtggtag caccctgatcg ctgctgaacg gcagcctggc caagggcgag 720
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aagcccggtga agatcggtg cgtgcgcaccc aacaacaaca cccgcaagag cgtgcgcac 840
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atcacccctga ccgtcgaggc ccgcctgcgt ctgagcgccca tcgtgcagca gcagaacaac 1560
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atcaacaact acaccgacac catctaccgc ctgctggagg agagccagaa ccagcaggag 1860
aagaacgaga aggacctgct gcccctggac agctggcaga acctgtggaa ctggttcagc 1920
atcaccaact ggctgtggta catc 1944

<210> 8
<211> 2466
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
gp160 coding region of HIV strain AF110968

<400> 8
agcgtgggtgg gcaacctgtg ggtgaccgtg tactacggcg tgccctgtg gaaggaggcc 60
aagaccaccc tggccaccc acgcctgcgt gcccaccgac cccaaaccccc aggagatcg gctggagaac 120
gtgaccgaga acttcaacat gtgagaagaac gacatggtgg accagatgca cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc tgcgtgaagc tgaccccccgt gtgcgtgacc 300

ctgaagtgcc gcaacgtgaa cgccaccaac aacatcaaca gcatgatcgca caacagcaac 360
aagggcgaga tgaagaactg cagcttcaac gtgaccaccc agctgcgcga ccgcaagcag 420
gaggtgcacg ccctgttcta ccgcctggac gtgggtcccc tgcaggcaca caacagcaac 480
gagtaaccgcc tcatcaactg caacaccagc gccatcaccc aggccctgccc caaggtgagc 540
ttcgacccca tccccatcca ctactgcacc cccgcggct acgcctatccct gaagtgcac 600
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ggcatcaagc ccgtggtag caccctgatcg ctgctgaacg gcagcctggc caagggcgag 720
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aagcccggtga agatcggtg cgtgcgcccc aacaacaaca cccgcaagag cgtgcgcac 840
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aagaacgaga aggacctgct gggctggac agctggcaga acctgtggaa ctggttcagc 1920
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ctggacacca tggccatcgca cgtggccgag ggcaccgacc gcatcatcgatcc 2400
cgcatctgcc ggcgcattcc caacatcccc cggccatcc gccaggcgtt cgaggccgccc 2460
ctgcag 2466

<210> 9
<211> 2547
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
signal sequence and gp160 coding region of HIV
strain AF110968

<400> 9
atgcgcgtga tgggcatttc gaagaactac cagcagtggt ggtatgtgggg catcctggc 60
ttctggatgc tgatcatcg cagcgtggtg ggcaacctgt ggggtggccgt gtactacggc 120
gtgcctgtgt ggaaggaggc caagaccacc ctgttctgca ccagcgacgc caaggcctac 180
gagaccgagg tgcacaacgt gtggggccacc cacgcctgcg tgccaccggc ccccaacccc 240
caggagatcg tgctggagaa cgtgaccgag aacttcaaca tggtaagaa cgacatggtg 300

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agcatgatcg acaacagcaa caagggcgag atgaagaact gcagcttcaa cgtgaccacc 480
gagctgcgcg accgcaagca ggaggtgcac gcccgtttt accgcctggc cgtgggtggcc 540
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 aagaagagcg ccatcagcct gctggacacc atgcacatcg ccgtggccga gggcaccgc 2460
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 cgcaggcgt tcgaggccgc cctgcag 2547

<210> 10
 <211> 1035
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic a
 gp41 coding region of HIV strain AF110968

<400> 10
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 gcccgcagca tcaccctgac cgtgcaggcc cgcctgtgc tgagcggcat cgtgcagcag 120
 cagaacaacc tgctgcgcgc catcgaggcc cagcagcacc tgctgcagct gaccgtgtgg 180
 ggcatcaaggc agctgcagac cccgcatacgt gccgtggagc gctacctgaa ggaccagcag 240
 ctgctggcga tctgggctg cagcggcaag ctgatctgca ccaccgcgt gcccctggaaac 300

 agcagctgga gcaaccgcag ccacgacgag atctggaca acatgacctg gatgcagtgg 360
 gaccgcgaga tcaacaacta caccgacacc atctaccgc tgctggagga gagccagaac 420
 cagcaggaga agaacgagaa ggacctgtg cccctggaca gctggcagaa cctgtggaaac 480
 tggttcagca tcaccaactg gctgtggtaC atcaagatct tcatcatgat cgtggcggc 540
 ctgatcgccc tgcgcatacat cttgcgcgtg ctgagcatcg tgaaccgcgt gcgcgcaggc 600
 tacagcccccc tggcccttcca gaccctgacc cccaaacccc gcgagccgcg cccctggc 660
 cgcacatcgagg aggaggcgg cgagcaggac cgcggccgc gcatccgcct ggtgagcggc 720
 ttccctggccc tggccctggga cgcacctgcgc agcctgtgc tgttcagcta ccaccgcctg 780
 cgcgacttca tcctgtatcg cgcgcgcgtg ctggagctgc tggccagcg cggctggag 840
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 atcagcctgc tggacaccat cgcacatcgcc gtggccgagg gcaccgaccc catcatcgag 960
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gagggccgccc tgcag 1035
 <210> 11
 <211> 144
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: synthetic Env
 common region of HIV strain AF110975

 <400> 11
 agcatcatca ccctgcctg ccgcataaag cagatcatcg acatgtggca gaagggtggc 60
 cgcgcatac acgccccccc catcgaggc aacatcacct gcagcagcag catcaccggc 120
 ctgtctgg cccgcgacgg cgcc 144

 <210> 12
 <211> 1437
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Description of Artificial Sequence: synthetic
 gp120 coding region of HIV strain AF110975

 <400> 12
 agccgcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgccctgtg ggcgcaggcc 60
 agcaccaccc tggctgcgc cagcgcacgc aaggctacg agaaggaggt gcacaacgtg 120
 tggccaccc acgcctgcgt gccacccgc cccaaacccc aggagatcga gctggacaac 180
 gtgaccgaga acttcaacat gtgaaagaac gacatggtg accagatcga cgaggacatc 240
 atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgaccccccgt gtgcgtgacc 300
 ctgaagtgc ccaactacag caccacactac agcaacacca tgaacgcccac cagctacaac 360
 aacaacacca cggaggagat caagaactgc accttcaaca tgaccacccga gctgcgcgac 420
 aagaagcgc aggtgtacgc cctgttctac aagctggaca tctgtggccctt gaacagcaac 480
 agcagcgt agccgcctgtat caactgcac accagcgcac tcacccaggc ctgcggcaac 540
 gtgagcttcg accccatccc catccactac tgcgccttcg cccggctacgc catcctgaag 600
 tgcaagaaca acaccagcaa cggcaccggc ccctgcccaga acgtgagcacc cgtgcagtgc 660
 acccacggca tcaagcccgt ggtgagcacc cccctgtgc tgaacggcag cctggccgag 720
 ggcggcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcg 780
 cacctgaacg acagcgtgga gatcgtgtgc acccgccccca acaacaacac cgcgaaggc 840
 atccgcacatcg gccccggcca gaccttctac gccaccgaga acatcatcg ggacatccgc 900
 caggcccact gcaacatcg cggccggcag tggacaagg ccgtgcagcg cgtgagcgc 960

 aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccgacg cggcggcgc 1020
 ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg caacaccac 1080
 aagctttca acagcagcta caacggcacc agtaccgcg gcaccgagag caacagcagc 1140
 atcatcaccc tggctgcgc catcaacgcg atcatcgaca tggatggcggaa ggtggccgc 1200
 gccatctacg ccccccacat cgaggcacaac atcaccgtca gcagcagcat caccggcctg 1260
 ctgtggccc ggcacggcgg cctggacaac atcaccaccc agatcttccg ccccaaggc 1320
 ggcgcacatga aggacaactg ggcacacgag ctgtacaagt acaagggtggt ggagatcaag 1380
 cccctggcggc tggccccac cggggccaaag cggccggcgtgg tggagcgcga gaagcgc 1437

 <210> 13
 <211> 1950
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
gp140 coding region of HIV strain AF110975

<400> 13

agccgcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgccctgtgt ggcgcgaggcc 60
agcaccaccc tggctctgcgc cagcgacgac aaggcctacg agaaggaggt gcacaacgtg 120
tggccacccc acgcctgcgt gcccaccgac cccaaaccccc agagatcga gctggacaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatcga cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgaccccccgt gtgcgtgacc 300
ctgaagtgc acaactacag caccaactac agcaacacca tgaacgcccac cagctacaac 360
aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420
aagaagcagc aggtgtacgc cctgttctac aagctggaca tcgtgccccgt gaacagcaac 480
agcagcgagt accgcctgtat caactgcaac accagcgccat tcaccccgcc ctgccccaaag 540
gtgagcttcg accccatccc catccactac tgccgcggcc cccgctacgc catcctgaag 600
tgcaagaaca acaccagcaa cggcaccggc ccctgccaga acgtgagcac cgtcagtgc 660
accacacggca tcaagccgt ggtgagcacc cccctgtgc tgaacggcag cctggccgag 720
ggccgcgaga tcatcatccg cagcaagaac ctgagcaaca accgcctacac catcatcg 780
cacctgaacg acagcgtgga gatcgtgtgc acccgccccca acaacaacac ccgcaaggcc 840
atccgcacatcg gccccggccaa gacccctac gcccaccgaga acatcatcg 900
caggcccact gcaacatcag cggccggcag tggaaacaagg cctgtgcagcg cgtgagcgcc 960
aagctgcgcg agcacttccc caacaagacc atcgagttcc agcccgacgag cggcggccgac 1020
ctggagatca ccacccacag cttcaactgc cgcggcgagt tcttctactg caacaccagc 1080
aagctgttca acagcagcta caacggcacc agtaccgcg qcaccgagaa caacagcagc 1140
atcatcaccc tggccctgcg catcaagcag atcatcgaca tggcggcagaa ggtggccgc 1200
gccccatctacg ccccccacat cgaggccaaat atcaccctgcg tggcggcagcat caccggcctg 1260
ctgctggccc ggcacggccg cctggacaac atcaccaccg agatcttccg ccccccaggcc 1320
ggcgcacatga aggacaactg ggcacacggc ctgtacaagt acaagggtggt ggagatcaag 1380
ccccctggcg tggcccccacat cgaggccaaat cggccgcgtgg tggcggcgcga gaagcgcgc 1440
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gcccacatca ccctgaccgc ccaggccccgc cagctgtga gggcgcgtgc ggcgcacgc 1560
agaacacctgc tggccgcgcat cgaggccccag cggccacatgc tggcgcgtgc cgtgtggggc 1620
atcaagcagc tggccgcgcat cggtgcgtggc atcgagcgct acctgaagga ccagcagctg 1680
ctggccatct ggggctgcag cggcaagctg atctgcacca ccaccgtgc ctggaaacagc 1740
agctggagca acaagacccca gggcgagatc tgggagaaca tgacactggat gcagttggac 1800
aaggagatca gcaactacac cggcatcatc taccgcctgc tggaggagag ccagaaccag 1860
caggagcaga acgagaagga cctgctggcc ctggacagcc gcaacaacct gtggagctgg 1920
ttcaacatca gcaactggct tggatcatc 1950

<210> 14

<211> 2493

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic
gp160 coding region of HIV strain AF110975

<400> 14

agccgcctgg gcaacctgtg ggtgaccgtg tacgacggcg tgccctgtgt ggcgcgaggcc 60
agcaccaccc tggctctgcgc cagcgacgac aaggcctacg agaaggaggt gcacaacgtg 120
tggccacccc acgcctgcgt gcccaccgac cccaaaccccc agagatcga gctggacaac 180
gtgaccgaga acttcaacat gtggaagaac gacatggtgg accagatcga cgaggacatc 240
atcagcctgt gggaccagag cctgaagccc cgcgtgaagc tgaccccccgt gtgcgtgacc 300
ctgaagtgc acaactacag caccaactac agcaacacca tgaacgcccac cagctacaac 360
aacaacacca ccgaggagat caagaactgc accttcaaca tgaccaccga gctgcgcgac 420

aagaagcagc aggtgtacgc cctgttctac aagctggaca tcgtgcccct gaacagcaac 480
agcagcgagt accgcctgat caactgcaac accagcgcca tcacccaggc ctgccccaaag 540
gtgagttcg accccatccc catccactac tgcgcccccg cccgctacgc catcctgaag 600
tgcaagaaca acaccagcaa cgccaccggc ccctgcaga acgtgagcac cgtcaagtgc 660
acccacggca tcaagcccgt ggtgagcacccctgctgc tgaacggcag cctggccgag 720
ggccgcgaga tcatcatccg cagcaagaac ctgagcaaca acgcctacac catcatcg 780
cacctgaacg acagcgtgga gatcgtgtgc acccgccccca acaaacaacac ccgcaagggc 840
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aagctgcgagc agcacttccc caacaagacc atcgagttcc agcccagcg cggcgccgac 1020
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aagctgttca acagcagcta caacggcacc agtaccgcg gcaccgagaa caacagcagc 1140
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gccagcatca ccctgaccgc ccaggcccgc cagctgctga gcggcatcg gcagcagcag 1560
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cagggcaga acgagaagga cctgctggcc ctggacagcc gcaacaacct gtggagctgg 1920
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accgaccgcgca tcatcgaggt gatccagcgcc atctaccgcg ccttctgcaa catccccccgc 2460
cgcgctgcgc cgggctcga gcccgcctgc cag 2493

<210> 15
<211> 2565

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic
signal sequence and gp160 coding region of HIV
strain AF110975

<400> 15
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ttctggatct gcagcgccct gggcaacctg tgggtgaccg tgcgtacgcgg cgtgcgcgtg 120
tggcgccagg ccagcaccac cctgttctgc ggcgcgcgc ccaaggccata cgagaaggag 180
gtgcacaacg tggggccac ccacgcctgc gtgcgcaccgc accccaaccc ccaggagatc 240
gagctggaca acgtgaccga gaacttcaac atgtggaaaga acgacatggt ggaccagatg 300
cagcaggaca tcatcagcct tggggaccag agcctgaagc cccgcgtgaa gctgacccccc 360
ctgtgcgtga ccctgaagtgc caccactac agcaccact acagcaacac catgaacgc 420
accagctaca acaacaacac caccgaggag atcaagaact gcaccttcaa catgaccacc 480
gagctgcgcg acaagaagca gcaggtgtac gccctgttct acaagctggaa catcgcc 540

ctgaacagca acagcagcga gtaccgcctg atcaactgca acaccagcgc catcacccag 600
 gcctgccccca aggtgagctt cgaccccatc cccatccact actgcgcccc cgccgctac 660
 gccatcctga agtgcaagaa caacaccagg aacggcacccg gcccctgcca gaacgtgagc 720
 accgtgcagt gcacccacgg catcaagccc gtggtgagca ccccccctgtc gctgaacggc 780
 agcctggccg agggcggcga gatcatcatc cgccagcaaga acctgagcaa caacgcctac 840
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 acccgcaagg gcatccgcat cgccccggc cagaccttct acggccaccga gaacatcatc 960
 ggcgacatcc gccaggccc ctgcaacatc agcgccggcg aatggaaaca ggcgtgcag 1020
 cgctgagcg ccaagctgctg cgagcacttc cccaaacaaga ccatcgagtt ccagcccagc 1080
 agccggccgcg acctggagat caccacccac agcttcaact gccgcccccg gttcttctac 1140
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 agcaacagca gcatcatcac cctgcccctgc cgcatcaagc agatcatcgat catgtggcag 1260
 aaggtggcc ggcgcatacg cggccatcta cggccccccc atcgaggcga acatcacctg cagcagcagc 1320
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 cgccccccagg gggcgacat gaaggacaac tggcgcaacg agctgtacaa gtacaagggt 1440
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 gagaaggcgcg ccgtggcat cggccgcgtg atcttcggct tcttggcgc cgccggcagc 1560
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 caccgcctgc ggcgcacccgt gcttggtgc gcccgcgtgg tggagctgc gggccgcagc 2340
 agccccccgcg gctgcacgcg cggctgggag gcccctgaatg acctggcagc ccttggcag 2400
 tacttggggcc tggagctgaa gaagagcgc accagccctgc tggacagcat gcccatacgcc 2460
 gtggccgagg gcaccgcaccc catcatcgag gtatccaccc gcatctaccg cgccttctgc 2520
 aacatcccccc gccgcgtgcg ccaggcgttc gaggccgccc tgcag 2565

<210> 16

<211> 1056

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic a
gp41 coding region of HIV strain AF110975

<400> 16

gccgtggca tcggccgcgt gatcttcggc ttcttggcg cccgcggcag caacatgggc 60
 gcccgcagca tcaccctgac cgcgcaggcc cgccagctgc tgagcgccat cgtgcagcag 120
 cagagcaacc tgctgcgcgc catcgaggcc cagcagcaca tgctgcagct gaccgtgtgg 180
 ggcacatcaagc agtgcacggc cgcgtgtgc gccatcgac gctacctgaa ggaccagcag 240
 ctgtgggca tcttgggctg cagcggcaag ctgtatcgac ccaccacccgt gcccctggaaac 300
 agcagctgga gcaacaagac ccaggccgag atcttggaga acatgacccgt gatgcagttgg 360
 gacaaggaga tcagcaacta caccggcatc atctaccgc tgcgtggagga gagccagaac 420
 cagcaggagc agaacgagaa ggacctgtgc gcccctggaca gcccacaa cctgtggagc 480
 tggttcaaca tcagcaactg gctgtggatc atcaagatct tcatcatgat cgtggccggc 540
 ctgtatccgc tgcgcacatc ttgcgcgtgc ctgagcatcg tgaaccgcgt gcccaggccc 600
 tacagcccccc tggatccca gaccctgacc cccaaacccccc gccgcctggaa ccgcctggcc 660

cgcatcgagg aggagggcgg cgagcaggac cgcgaccgca gcatccgcct ggtgcagggc 720
ttcctggccc tggcctggga cgacctgcgc agcctgtgcc tttcagcta ccaccgcctg 780
cgacactga tcctgggtac cgcgcgtg gtggagctgc tggccgcag cagccccgc 840
ggcctgcagc gggctggga ggcctgaag tacctggca gcctgggtgca gtactgggc 900
ctggagctga agaagagcgc caccagcctg ctggacagca tcgccatcgc cgtggccgag 960
ggcaccgacc gcatcatcga ggtgatccag cgcatctacc ggccttctg caacatcccc 1020
cgccgcgtgc gccaggcgtt cgaggccgcc ctgcag 1056

<210> 17
<211> 492
<212> PRT
<213> Human immunodeficiency virus

<400> 17
Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Gly Lys Leu Asp Ala Trp
1 5 10 15
Met Gly Ala Arg Leu Arg Pro Gly Gly Lys Lys Cys Tyr Met Met Lys
20 25 30
His Leu Val Trp Ala Ser Arg Glu Leu Glu Lys Phe Ala Leu Asn Pro
35 40 45
Gly Leu Leu Glu Thr Ser Glu Gly Cys Lys Gln Ile Ile Arg Gln Leu
50 55 60
His Pro Ala Leu Gln Thr Gly Ser Glu Glu Leu Lys Ser Leu Phe Asn
65 70 75 80
Thr Val Ala Thr Leu Tyr Cys Val His Glu Lys Ile Glu Val Arg Asp
85 90 95
Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Gln Asn Lys Cys Gln
100 105 110
Gln Lys Ile Gln Gln Ala Glu Ala Asp Lys Gly Lys Val Ser Gln
115 120 125
Asn Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala
130 135 140
Ile Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys
145 150 155 160
Ala Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly
165 170 175
Ala Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His
180 185 190
Gln Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala
195 200 205
Glu Trp Asp Arg Val His Pro Val His Ala Gly Pro Ile Ala Pro Gly
210 215 220
Gln Met Arg Glu Pro Arg Gly Ser Asp Ile Ala Gly Thr Thr Ser Thr

| 225 | 230 | 235 | 240 |
|---|-----|-----|-----|
| Leu Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Ile Pro Val | | | |
| 245 | 250 | 255 | |
| Gly Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val | | | |
| 260 | 265 | 270 | |
| Arg Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Lys Gln Gly Pro Lys | | | |
| 275 | 280 | 285 | |
| Glu Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala | | | |
| 290 | 295 | 300 | |
| Glu Gln Ser Thr Gln Glu Val Lys Asn Trp Met Thr Asp Thr Leu Leu | | | |
| 305 | 310 | 315 | 320 |
| Val Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly | | | |
| 325 | 330 | 335 | |
| Pro Gly Ala Ser Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly | | | |
| 340 | 345 | 350 | |
| Gly Pro Ser His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala | | | |
| 355 | 360 | 365 | |
| Asn Thr Ser Val Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg | | | |
| 370 | 375 | 380 | |
| Ile Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Arg Asn | | | |
| 385 | 390 | 395 | 400 |
| Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly | | | |
| 405 | 410 | 415 | |
| His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys | | | |
| 420 | 425 | 430 | |
| Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Ser Arg | | | |
| 435 | 440 | 445 | |
| Pro Glu Pro Thr Ala Pro Pro Ala Glu Ser Phe Arg Phe Glu Glu Thr | | | |
| 450 | 455 | 460 | |
| Thr Pro Gly Gln Lys Gln Glu Ser Lys Asp Arg Glu Thr Leu Thr Ser | | | |
| 465 | 470 | 475 | 480 |
| Leu Lys Ser Leu Phe Gly Asn Asp Pro Leu Ser Gln | | | |
| 485 | 490 | | |

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<210> 18
<211> 81
<212> DNA
<213> Artificial Sequence
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<220>
 <223> Description of Artificial Sequence: synthetic
 signal sequence of HIV strain AF110968

<400> 18
 atgcgcgtga tgggcattcct gaagaactac cagcagtggt ggatgtgggg catcctgggc 60
 ttctggatgc tgatcatcag c 81

<210> 19
 <211> 72
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic
 signal sequence of HIV strain AF110975

<400> 19
 atgcgcgtgc gcggcattcct gcgcagctgg cagcagtggt ggatctgggg catcctgggc 60
 ttctggatct gc 72

<210> 20
 <211> 1479
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic Gag
 coding sequence of HIV strain AF110965

<400> 20
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 ctggagaagt tcgcgcctgaa ccccgccctg ctggagacca gcgaggcgtg caagcagatc 180
 atccgcgcgc tgcacccgc cctgcagacc ggcagcggagg agctgaagag cctgttcaac 240
 accgtggcca ccctgtactg cgtgcacgag aagatcgagg tgccgcacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag tgccagcaga agatccagca ggcgcaggcc 360
 gccgacaagg gcaaggtagg ccagaactac cccatctgc agaacctgca gggccagatg 420
 gtgcaccagg ccatcagccc cgcacccctg aacgcctggg tgaagggtgat cgaggagaag 480
 gccttcagcc ccgaggtgat cccatgttc accgcctga gcgaggcgc caccggcc 540
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 atcgcccccggc gccagatgcg cgagccgcg ggcagcgcaca tcgcgcgcac caccaggcacc 720
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 aacgcgtgaa tcatacgtgg cctgaacaag atcgtgcgc tgcgtacagccc cgtgagcata 840
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 cccggcaact tcctgcagag cccgcggcag cccacccccc ccccccggcga gagctccgc 1380
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 ctgaagagcc tggatgcgaa cgcacccctg agccagtaa 1479

<210> 21
 <211> 1509
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: synthetic Gag
 coding sequence of HIV strain AF110967

<400> 21
 atgggcgccc gcgccagcat cctgcgcggc gagaagctgg acaagtggga gaagatccgc 60
 ctgcgcggcc gggcaagaa gcaactacatg ctgaagcacc tgggtgtggc cagccgcgag 120
 ctggagggtct tcgcctgaa cccggcctg ctggagaccg ccgagggtctg caagcagatc 180
 atgaagcagc tgcagccgc cctgcagacc ggcaccgagg agctgcgcag cctgtacaac 240
 accgtggcca ccctgtactg cgtgcacgac ggcacatcgagg tgcgcgacac caaggaggcc 300
 ctggacaaga tcgaggagga gcagaacaag agccagcaga agacccagca ggccaaggag 360
 gccgacggca aggtgagcca gaactacccc atcgtgcaga acctgcaggg ccagatggtg 420
 caccaggcca tcagcccccg caccctgaac gcctgggtga aggtgatcga ggagaaggcc 480
 ttcagcccccg aggtgatccc catgttcaacc gcccctgagcg agggcgccac ccccccaggac 540
 ctgaacacca tgctgaacac cgtggcgcc caccaggccg ccatgcagat gctgaaggac 600
 accatcaacg aggaggccgc cgagtgggac cgcctgcacc cctgtgcaggg cggccccgtg 660
 gccccccggcc agatgcgcga ccccccggc agcgacatcg cccggcgcac cagcaccctg 720
 caggagcaga tcgcctggat gaccagcaac ccccccgtgc cctgtgggca catctacaag 780
 cgctggatca tcctggcct gaacaagatc gtgcgcatgt acagccccgt gagcatcctg 840
 gacatccgccc agggccccaa ggagcccttc cgcgactacg tggaccgctt cttcaagacc 900
 ctgcgcgcgcg agcaggccac ccaggacgtg aagaactgga tgaccgagac cctgctggtg 960
 cagaacgcaca acccccactg caagaccatc ctgcgcgcgc tggggccccgg cgccaccctg 1020

gaggagatga tgaccgcctg ccagggcggtg ggcggggcccg gccacaaggc ccgcgtgctg 1080
 gccgaggcca tgagccaggc caacagcggtg aacatcatga tgcagaagag caacttcaag 1140
 ggcggccgc gcaacgtgaa gtgttcaac tgcggcaagg agggccacat cgccaaagaac 1200
 tgccgcgc cccgcaagaa gggctgtgg aagtgcggca aggagggccca ccagatgaag 1260
 gactgcacccg agcgccaggc caacttcctg ggcaagatct ggcccagccca caaggggccgc 1320
 cccggcaact tcctgcagaa ccgcagcgag cccggccccc ccaccgtgccc caccggcccc 1380
 cccggccgaga gcttccgctt cgaggagacc acccccggcc ccaagcagga gcccaggac 1440
 cgcgagccctt accgcgagcc cctgaccgccc ctgcgcagcc tggatcggtg cggccccctg 1500
 agccagtaa 1509

<210> 22
 <211> 502
 <212> PRT
 <213> Human immunodeficiency virus

<400> 22
 Met Gly Ala Arg Ala Ser Ile Leu Arg Gly Glu Lys Leu Asp Lys Trp
 1 5 10 15

Glu Lys Ile Arg Leu Arg Pro Gly Gly Lys Lys His Tyr Met Leu Lys
 20 25 30

His Leu Val Trp Ala Ser Arg Glu Leu Glu Gly Phe Ala Leu Asn Pro
 35 40 45

Gly Leu Leu Glu Thr Ala Glu Gly Cys Lys Gln Ile Met Lys Gln Leu
 50 55 60

Gln Pro Ala Leu Gln Thr Gly Thr Glu Glu Leu Arg Ser Leu Tyr Asn
 65 70 75 80
 Thr Val Ala Thr Leu Tyr Cys Val His Ala Gly Ile Glu Val Arg Asp
 85 90 95
 Thr Lys Glu Ala Leu Asp Lys Ile Glu Glu Glu Gln Asn Lys Ser Gln
 100 105 110
 Gln Lys Thr Gln Gln Ala Lys Glu Ala Asp Gly Lys Val Ser Gln Asn
 115 120 125
 Tyr Pro Ile Val Gln Asn Leu Gln Gly Gln Met Val His Gln Ala Ile
 130 135 140
 Ser Pro Arg Thr Leu Asn Ala Trp Val Lys Val Ile Glu Glu Lys Ala
 145 150 155 160
 Phe Ser Pro Glu Val Ile Pro Met Phe Thr Ala Leu Ser Glu Gly Ala
 165 170 175
 Thr Pro Gln Asp Leu Asn Thr Met Leu Asn Thr Val Gly Gly His Gln
 180 185 190
 Ala Ala Met Gln Met Leu Lys Asp Thr Ile Asn Glu Glu Ala Ala Glu
 195 200 205
 Trp Asp Arg Leu His Pro Val Gln Ala Gly Pro Val Ala Pro Gly Gln
 210 215 220
 Met Arg Asp Pro Arg Gly Ser Asp Ile Ala Gly Ala Thr Ser Thr Leu
 225 230 235 240
 Gln Glu Gln Ile Ala Trp Met Thr Ser Asn Pro Pro Val Pro Val Gly
 245 250 255
 Asp Ile Tyr Lys Arg Trp Ile Ile Leu Gly Leu Asn Lys Ile Val Arg
 260 265 270
 Met Tyr Ser Pro Val Ser Ile Leu Asp Ile Arg Gln Gly Pro Lys Glu
 275 280 285
 Pro Phe Arg Asp Tyr Val Asp Arg Phe Phe Lys Thr Leu Arg Ala Glu
 290 295 300
 Gln Ala Thr Gln Asp Val Lys Asn Trp Met Thr Glu Thr Leu Leu Val
 305 310 315 320
 Gln Asn Ala Asn Pro Asp Cys Lys Thr Ile Leu Arg Ala Leu Gly Pro
 325 330 335
 Gly Ala Thr Leu Glu Glu Met Met Thr Ala Cys Gln Gly Val Gly Gly
 340 345 350
 Pro Gly His Lys Ala Arg Val Leu Ala Glu Ala Met Ser Gln Ala Asn
 355 360 365

Ser Val Asn Ile Met Met Gln Lys Ser Asn Phe Lys Gly Pro Arg Arg
 370 375 380
 Asn Val Lys Cys Phe Asn Cys Gly Lys Glu Gly His Ile Ala Lys Asn
 385 390 395 400
 Cys Arg Ala Pro Arg Lys Lys Gly Cys Trp Lys Cys Gly Lys Glu Gly
 405 410 415
 His Gln Met Lys Asp Cys Thr Glu Arg Gln Ala Asn Phe Leu Gly Lys
 420 425 430
 Ile Trp Pro Ser His Lys Gly Arg Pro Gly Asn Phe Leu Gln Asn Arg
 435 440 445
 Ser Glu Pro Ala Ala Pro Thr Val Pro Thr Ala Pro Pro Ala Glu Ser
 450 455 460
 Phe Arg Phe Glu Glu Thr Thr Pro Ala Pro Lys Gln Glu Pro Lys Asp
 465 470 475 480
 Arg Glu Pro Tyr Arg Glu Pro Leu Thr Ala Leu Arg Ser Leu Phe Gly
 485 490 495
 Ser Gly Pro Leu Ser Gln
 500

<210> 23
 <211> 849
 <212> PRT
 <213> Human immunodeficiency virus
 <400> 23
 Met Arg Val Met Gly Ile Leu Lys Asn Tyr Gln Gln Trp Trp Met Trp
 1 5 10 15
 Gly Ile Leu Gly Phe Trp Met Leu Ile Ile Ser Ser Val Val Gly Asn
 20 25 30
 Leu Trp Val Thr Val Tyr Tyr Gly Val Pro Val Trp Lys Glu Ala Lys
 35 40 45
 Thr Thr Leu Phe Cys Thr Ser Asp Ala Lys Ala Tyr Glu Thr Glu Val
 50 55 60
 His Asn Val Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro
 65 70 75 80
 Gln Glu Ile Val Leu Glu Asn Val Thr Glu Asn Phe Asn Met Trp Lys
 85 90 95
 Asn Asp Met Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp
 100 105 110
 Gln Ser Leu Lys Pro Cys Val Lys Leu Thr Pro Leu Cys Val Thr Leu

| | | | |
|---|-----|-----|-----|
| 115 | 120 | 125 | |
| Lys Cys Arg Asn Val Asn Ala Thr Asn Asn Ile Asn Ser Met Ile Asp | | | |
| 130 | 135 | 140 | |
| Asn Ser Asn Lys Gly Glu Met Lys Asn Cys Ser Phe Asn Val Thr Thr | | | |
| 145 | 150 | 155 | 160 |
| Glu Leu Arg Asp Arg Lys Gln Glu Val His Ala Leu Phe Tyr Arg Leu | | | |
| 165 | 170 | 175 | |
| Asp Val Val Pro Leu Gln Gly Asn Asn Ser Asn Glu Tyr Arg Leu Ile | | | |
| 180 | 185 | 190 | |
| Asn Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe | | | |
| 195 | 200 | 205 | |
| Asp Pro Ile Pro Ile His Tyr Cys Thr Pro Ala Gly Tyr Ala Ile Leu | | | |
| 210 | 215 | 220 | |
| Lys Cys Asn Asn Gln Thr Phe Asn Gly Thr Gly Pro Cys Asn Asn Val | | | |
| 225 | 230 | 235 | 240 |
| Ser Ser Val Gln Cys Ala His Gly Ile Lys Pro Val Val Ser Thr Gln | | | |
| 245 | 250 | 255 | |
| Leu Leu Leu Asn Gly Ser Leu Ala Lys Gly Glu Ile Ile Ile Arg Ser | | | |
| 260 | 265 | 270 | |
| Glu Asn Leu Ala Asn Asn Ala Lys Ile Ile Ile Val Gln Leu Asn Lys | | | |
| 275 | 280 | 285 | |
| Pro Val Lys Ile Val Cys Val Arg Pro Asn Asn Asn Thr Arg Lys Ser | | | |
| 290 | 295 | 300 | |
| Val Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Gly Glu Ile Ile | | | |
| 305 | 310 | 315 | 320 |
| Gly Asp Ile Arg Gln Ala Tyr Cys Ile Ile Asn Lys Thr Glu Trp Asn | | | |
| 325 | 330 | 335 | |
| Ser Thr Leu Gln Gly Val Ser Lys Lys Leu Glu Glu His Phe Ser Lys | | | |
| 340 | 345 | 350 | |
| Lys Ala Ile Lys Phe Glu Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr | | | |
| 355 | 360 | 365 | |
| Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asp Thr Ser | | | |
| 370 | 375 | 380 | |
| Gln Leu Phe Asn Ser Thr Tyr Ser Pro Ser Phe Asn Gly Thr Glu Asn | | | |
| 385 | 390 | 395 | 400 |
| Lys Leu Asn Gly Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile | | | |
| 405 | 410 | 415 | |
| Asn Met Trp Gln Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala | | | |

| | | | |
|---|-----|---------------------|-----|
| 420 | 425 | 430 | |
| Gly Asn Leu Thr Cys Glu Ser Asn Ile Thr Gly Leu | Leu | Leu Thr Arg | |
| 435 | 440 | 445 | |
| Asp Gly Gly Lys Thr Gly Pro Asn Asp Thr Glu Ile | Phe | Arg Pro Gly | |
| 450 | 455 | 460 | |
| Gly Gly Asp Met Arg Asp Asn Trp Arg Asn Glu | Leu | Tyr Lys Tyr Lys | |
| 465 | 470 | 475 | 480 |
| Val Val Glu Ile Lys Pro Leu Gly Val Ala Pro | Thr | Glu Ala Lys Arg | |
| 485 | 490 | 495 | |
| Arg Val Val Glu Arg Glu Lys Arg Ala Val Gly | Ile | Gly Ala Val Phe | |
| 500 | 505 | 510 | |
| Leu Gly Phe Leu Gly Ala Ala Gly Ser Thr Met | Gly | Ala Ala Ser Ile | |
| 515 | 520 | 525 | |
| Thr Leu Thr Val Gln Ala Arg Leu Leu Leu Ser | Gly | Ile Val Gln Gln | |
| 530 | 535 | 540 | |
| Gln Asn Asn Leu Leu Arg Ala Ile Glu Ala Gln | Gln | His Leu Leu Gln | |
| 545 | 550 | 555 | 560 |
| Leu Thr Val Trp Gly Ile Lys Gln Leu Gln Thr | Arg | Ile Leu Ala Val | |
| 565 | 570 | 575 | |
| Glu Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly | Ile | Trp Gly Cys Ser | |
| 580 | 585 | 590 | |
| Gly Lys Leu Ile Cys Thr Thr Ala Val Pro | Trp | Asn Ser Ser Trp Ser | |
| 595 | 600 | 605 | |
| Asn Arg Ser His Asp Glu Ile Trp Asp Asn Met | Thr | Trp Met Gln Trp | |
| 610 | 615 | 620 | |
| Asp Arg Glu Ile Asn Asn Tyr Thr Asp Thr Ile | Tyr | Arg Leu Leu Glu | |
| 625 | 630 | 635 | 640 |
| Glu Ser Gln Asn Gln Glu Lys Asn Glu Lys | Asp | Leu Ala Leu | |
| 645 | 650 | 655 | |
| Asp Ser Trp Gln Asn Leu Trp Asn Trp Phe | Ser | Ile Thr Asn Trp Leu | |
| 660 | 665 | 670 | |
| Trp Tyr Ile Lys Ile Phe Ile Met Ile Val Gly | Gly | Leu Ile Gly Leu | |
| 675 | 680 | 685 | |
| Arg Ile Ile Phe Ala Val Leu Ser Ile Val Asn | Arg | Val Arg Gln Gly | |
| 690 | 695 | 700 | |
| Tyr Ser Pro Leu Pro Phe Gln Thr Leu Thr Pro | Asn | Pro Arg Glu Pro | |
| 705 | 710 | 715 | 720 |

Asp Arg Leu Gly Arg Ile Glu Glu Glu Gly Gly Glu Gln Asp Arg Gly
725 730 735

Arg Ser Ile Arg Leu Val Ser Gly Phe Leu Ala Leu Ala Trp Asp Asp
740 745 750

Leu Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Phe Ile
755 760 765

Leu Ile Ala Ala Arg Val Leu Glu Leu Leu Gly Gln Arg Gly Trp Glu
770 775 780

Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln Tyr Trp Gly Leu Glu Leu
785 790 795 800

Lys Lys Ser Ala Ile Ser Leu Leu Asp Thr Ile Ala Ile Ala Val Ala
805 810 815

Glu Gly Thr Asp Arg Ile Ile Glu Phe Ile Gln Arg Ile Cys Arg Ala
820 825 830

Ile Arg Asn Ile Pro Arg Arg Ile Arg Gln Gly Phe Glu Ala Ala Leu
835 840 845

Gln

<210> 24
<211> 855
<212> PRT
<213> Human immunodeficiency virus

<400> 24
Met Arg Val Arg Gly Ile Leu Arg Ser Trp Gln Gln Trp Trp Ile Trp
1 5 10 15

Gly Ile Leu Gly Phe Trp Ile Cys Ser Gly Leu Gly Asn Leu Trp Val
20 25 30

Thr Val Tyr Asp Gly Val Pro Val Trp Arg Glu Ala Ser Thr Thr Leu
35 40 45

Phe Cys Ala Ser Asp Ala Lys Ala Tyr Glu Lys Glu Val His Asn Val
50 55 60

Trp Ala Thr His Ala Cys Val Pro Thr Asp Pro Asn Pro Gln Glu Ile
65 70 75 80

Glu Leu Asp Asn Val Thr Glu Asn Phe Asn Met Trp Lys Asn Asp Met
85 90 95

Val Asp Gln Met His Glu Asp Ile Ile Ser Leu Trp Asp Gln Ser Leu
100 105 110

Lys Pro Arg Val Lys Leu Thr Pro Leu Cys Val Thr Leu Lys Cys Thr

| | | |
|---|-----|-----|
| 115 | 120 | 125 |
| Asn Tyr Ser Thr Asn Tyr Ser Asn Thr Met Asn Ala Thr Ser Tyr Asn | | |
| 130 | 135 | 140 |
| Asn Asn Thr Thr Glu Glu Ile Lys Asn Cys Thr Phe Asn Met Thr Thr | | |
| 145 | 150 | 155 |
| 160 | | |
| Glu Leu Arg Asp Lys Lys Gln Gln Val Tyr Ala Leu Phe Tyr Lys Leu | | |
| 165 | 170 | 175 |
| Asp Ile Val Pro Leu Asn Ser Asn Ser Glu Tyr Arg Leu Ile Asn | | |
| 180 | 185 | 190 |
| Cys Asn Thr Ser Ala Ile Thr Gln Ala Cys Pro Lys Val Ser Phe Asp | | |
| 195 | 200 | 205 |
| Pro Ile Pro Ile His Tyr Cys Ala Pro Ala Gly Tyr Ala Ile Leu Lys | | |
| 210 | 215 | 220 |
| Cys Lys Asn Asn Thr Ser Asn Gly Thr Gly Pro Cys Gln Asn Val Ser | | |
| 225 | 230 | 235 |
| 240 | | |
| Thr Val Gln Cys Thr His Gly Ile Lys Pro Val Val Ser Thr Pro Leu | | |
| 245 | 250 | 255 |
| Leu Leu Asn Gly Ser Leu Ala Glu Gly Gly Glu Ile Ile Arg Ser | | |
| 260 | 265 | 270 |
| Lys Asn Leu Ser Asn Asn Ala Tyr Thr Ile Ile Val His Leu Asn Asp | | |
| 275 | 280 | 285 |
| Ser Val Glu Ile Val Cys Thr Arg Pro Asn Asn Asn Thr Arg Lys Gly | | |
| 290 | 295 | 300 |
| Ile Arg Ile Gly Pro Gly Gln Thr Phe Tyr Ala Thr Glu Asn Ile Ile | | |
| 305 | 310 | 315 |
| 320 | | |
| Gly Asp Ile Arg Gln Ala His Cys Asn Ile Ser Ala Gly Glu Trp Asn | | |
| 325 | 330 | 335 |
| Lys Ala Val Gln Arg Val Ser Ala Lys Leu Arg Glu His Phe Pro Asn | | |
| 340 | 345 | 350 |
| Lys Thr Ile Glu Phe Gln Pro Ser Ser Gly Gly Asp Leu Glu Ile Thr | | |
| 355 | 360 | 365 |
| Thr His Ser Phe Asn Cys Arg Gly Glu Phe Phe Tyr Cys Asn Thr Ser | | |
| 370 | 375 | 380 |
| Lys Leu Phe Asn Ser Ser Tyr Asn Gly Thr Ser Tyr Arg Gly Thr Glu | | |
| 385 | 390 | 395 |
| 400 | | |
| Ser Asn Ser Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile | | |
| 405 | 410 | 415 |
| Asp Met Trp Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu | | |

| | | |
|---|-----|-----|
| 420 | 425 | 430 |
| Gly Asn Ile Thr Cys Ser Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg | | |
| 435 | 440 | 445 |
| Asp Gly Gly Leu Asp Asn Ile Thr Thr Glu Ile Phe Arg Pro Gln Gly | | |
| 450 | 455 | 460 |
| Gly Asp Met Lys Asp Asn Trp Arg Asn Glu Leu Tyr Lys Tyr Lys Val | | |
| 465 | 470 | 475 |
| Val Glu Ile Lys Pro Leu Gly Val Ala Pro Thr Glu Ala Lys Arg Arg | | |
| 485 | 490 | 495 |
| Val Val Glu Arg Glu Lys Arg Ala Val Gly Ile Gly Ala Val Ile Phe | | |
| 500 | 505 | 510 |
| Gly Phe Leu Gly Ala Ala Gly Ser Asn Met Gly Ala Ala Ser Ile Thr | | |
| 515 | 520 | 525 |
| Leu Thr Ala Gln Ala Arg Gln Leu Leu Ser Gly Ile Val Gln Gln Gln | | |
| 530 | 535 | 540 |
| Ser Asn Leu Leu Arg Ala Ile Glu Ala Gln Gln His Met Leu Gln Leu | | |
| 545 | 550 | 555 |
| 560 | | |
| Thr Val Trp Gly Ile Lys Gln Leu Gln Ala Arg Val Leu Ala Ile Glu | | |
| 565 | 570 | 575 |
| Arg Tyr Leu Lys Asp Gln Gln Leu Leu Gly Ile Trp Gly Cys Ser Gly | | |
| 580 | 585 | 590 |
| Lys Leu Ile Cys Thr Thr Val Pro Trp Asn Ser Ser Trp Ser Asn | | |
| 595 | 600 | 605 |
| Lys Thr Gln Gly Glu Ile Trp Glu Asn Met Thr Trp Met Gln Trp Asp | | |
| 610 | 615 | 620 |
| Lys Glu Ile Ser Asn Tyr Thr Gly Ile Ile Tyr Arg Leu Leu Glu Glu | | |
| 625 | 630 | 635 |
| 640 | | |
| Ser Gln Asn Gln Gln Glu Gln Asn Glu Lys Asp Leu Leu Ala Leu Asp | | |
| 645 | 650 | 655 |
| Ser Arg Asn Asn Leu Trp Ser Trp Phe Asn Ile Ser Asn Trp Leu Trp | | |
| 660 | 665 | 670 |
| Tyr Ile Lys Ile Phe Ile Met Ile Val Gly Gly Leu Ile Gly Leu Arg | | |
| 675 | 680 | 685 |
| Ile Ile Phe Ala Val Leu Ser Ile Val Asn Arg Val Arg Gln Gly Tyr | | |
| 690 | 695 | 700 |
| Ser Pro Leu Ser Phe Gln Thr Leu Thr Pro Asn Pro Arg Gly Leu Asp | | |
| 705 | 710 | 715 |
| 720 | | |

Arg Leu Gly Arg Ile Glu Glu Gly Glu Gln Asp Arg Asp Arg
725 730 735

Ser Ile Arg Leu Val Gln Gly Phe Leu Ala Leu Ala Trp Asp Asp Leu
740 745 750

Arg Ser Leu Cys Leu Phe Ser Tyr His Arg Leu Arg Asp Leu Ile Leu
755 760 765

Val Thr Ala Arg Val Val Glu Leu Leu Gly Arg Ser Ser Pro Arg Gly
770 775 780

Leu Gln Arg Gly Trp Glu Ala Leu Lys Tyr Leu Gly Ser Leu Val Gln
785 790 795 800

Tyr Trp Gly Leu Glu Leu Lys Lys Ser Ala Thr Ser Leu Leu Asp Ser
805 810 815

Ile Ala Ile Ala Val Ala Glu Gly Thr Asp Arg Ile Ile Glu Val Ile
820 825 830

Gln Arg Ile Tyr Arg Ala Phe Cys Asn Ile Pro Arg Arg Val Arg Gln
835 840 845

Gly Phe Glu Ala Ala Leu Gln
850 855

<210> 25

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 25

Asp Ile Lys Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg
1 5 10 15

Phe Phe Lys Thr
20

<210> 26

<211> 60

<212> DNA

<213> Human immunodeficiency virus

<400> 26

gacataaaac aaggacaaaa agagccttt agagactatg tagaccggtt ctttaaaacc 60

<210> 27

<211> 20

<212> PRT

<213> Human immunodeficiency virus

<400> 27

Asp Ile Arg Gln Gly Pro Lys Glu Pro Phe Arg Asp Tyr Val Asp Arg

| | | | |
|---|---|----|----|
| 1 | 5 | 10 | 15 |
|---|---|----|----|

Phe Phe Lys Thr
 20

<210> 28
 <211> 47
 <212> PRT
 <213> Human immunodeficiency virus

<400> 28
 Thr Ile Thr Ile Thr Cys Arg Ile Lys Gln Ile Ile Asn Met Trp Gln
 1 5 10 15

Lys Val Gly Arg Ala Met Tyr Ala Pro Pro Ile Ala Gly Asn Leu Thr
 20 25 30

Cys Glu Ser Asn Ile Thr Gly Leu Leu Leu Thr Arg Asp Gly Gly
 35 40 45

<210> 29
 <211> 48
 <212> PRT
 <213> Human immunodeficiency virus

<400> 29
 Ser Ile Ile Thr Leu Pro Cys Arg Ile Lys Gln Ile Ile Asp Met Trp
 1 5 10 15

Gln Lys Val Gly Arg Ala Ile Tyr Ala Pro Pro Ile Glu Gly Asn Ile
 20 25 30

Thr Cys Ser Ser Ser Ile Thr Gly Leu Leu Leu Ala Arg Asp Gly Gly
 35 40 45

<210> 30
 <211> 4
 <212> PRT
 <213> Human immunodeficiency virus

<400> 30
 Gly Gly Gly Ser